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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/023,109	Applicant(s) NIELSEN ET AL.	
	Examiner Lun-See Lao	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. This action is in response to the amendment filed 05-18-2006. Claims 5, 10, 13, 20, 25, 27, 32-35, 39-41 and 46 have been amended and claim 6 has been canceled. Claims 1-5 and 7-50 are pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 5 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claim limitation " the module for applying a predictable noise comprises. for each signal path: (a) a noise generator for providing a first predictable noise sample signal to the signal path to produce the output noise and providing a second predictable noise sample signal, the second predictable noise sample signal having a property <u>substantially identical</u> to the first predictable noise sample signal and <u>being substantially identical to the first predictable noise sample on a sample-by-sample basis</u>, the

identifying module comprises, each signal path" was not supported in the further detail in the specification nor in any of the claim (see specification page 6 lines 12-27).

4. Claim 13 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claim limitation " step of generating a second predictable digital noise signal includes a step of utilizing a maximum length sequence generator to generate the second predictable digital noise signal that is substantially identical to the first predictable noise signal on a sample-by-sample basis" was not supported in the further detail in the specification nor in any of the claim (see specification page 6 lines 12-27).

5. Claim 25 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claim limitation " the first noise generator includes a maximum length sequence generator for generating the first predictable digital noise signal that is substantially identical to the second predictable noise signal on a sample-by-sample basis" was not supported in the further detail in the specification nor in any of the claim (see specification page 6 lines 12-27).

6. Claim 27 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claim limitation " the first predictable digital noise signal is a first maximum length sequence noise, the second predictable digital noise signal being a second maximum length sequence noise that is substantially identical to the first predictable noise signal on a sample-by-sample basis" was not supported in the further detail in the specification nor in any of the claim (see specification page 6 lines 12-27).

7. Claim 46 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claim limitation " a module for providing a second predictable noise signal, the second predictable noise signal having a property substantially identical to the first predictable noise sample signal and being substantially identical to the first predictable noise signal on a sample-by-sample basis, the identifying circuit comprises, for each signal path" was not supported in the further detail in the specification nor in any of the claim (see specification page 6 lines 12-27).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-4, 7-11, 14-19, 22-24, 26, 29-31 and 33-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner (US PAT. 5,737,433) in view of Hamabe (US PAT. 5,426,703).

Consider claim 16, Gardner teaches an apparatus for equalizing output signals from a plurality of signals paths, the apparatus comprising:

(b) a module for identifying a transfer function (see fig. 3, (42,44)) of the each signal path based on a corresponding output noise (see col. 2 lines 7-22);

(c) a module (see fig.3, (42,44)) for determining, based on a single selected function (such as, FIR), a filtering function for each signal path such that the product of the transfer function and the filtering function is the selected function (see col. 7 line 1 – col.8 line 35); and

(d) a module (42,43) for applying the filtering function (such as, FIR) for each signal path to the corresponding transfer function, to generate the selected function, such that the output signals from the signal paths are substantially equal with respect to phase or magnitude and phase (see col.7 line 1-col.8 line 35), but Gardner does not clearly teach

that each signal path has a microphone, and a module for applying a predictable noise to each signal path to generate the output noise.

However, Hamabe teaches that each signal path has a microphone (see fig.1b 8a-8h), and a module for applying a predictable noise (such as, white noise) to each signal path to generate an output noise (see col. 5 line 31-col.6 line 67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a microphone into each signal path and to include, into the apparatus of Gardner, a module for applying a predictable noise to each signal path to generate the output noise. One of ordinary skill in the art would have been motivated to combine the teaching of Hamabe into Gardner because this would have provided an active noise eliminating system which can correct and update the noise elimination transfer function for providing a more reliable noise elimination function without causing noise pressure divergence (Hamabe, col. 2, lines 10-16).

As to claim 1, this is the method claim corresponding to apparatus claim 16. See previous apparatus claim 16 for rejection.

Consider claim 43, Gardner teaches a sound system comprising:

a system for providing sound signals to a user, including:

(a) a plurality of signal paths (see fig.3, ($r_1^{(j)}(n)$,...$r_{mj}^{(j)}(n)$)), for transmitting the sound signals to the user; and

(b) a filter provided to each signal path (see fig.3, (42))

an equalizing module, including:

(d) an identification circuit (42,44) for identifying a transfer function of the each

signal path based on a corresponding output noise (see col. 2 lines 7-22) and

(e) a determination circuit (42,44) for determining, based on a single selected function (44), a filtering function for each signal path (see fig.3, ($r_1^{(j)}$ (n),...$r_{mj}^{(j)}$ (n)) such that the product of the transfer function (42,44) and the filtering function is the selected function (44 and see col. 7 line 1-col. 8 line 35).

when the signal paths (see fig.3, ($r_1^{(j)}$ (n),...$r_{mj}^{(j)}$ (n)) transfer the sound signals to the user, the filtering function being applied to the corresponding filter to generate the selected function (44), whereby the sound signals from the sound providing system are substantially equal with respect to phase or phase and magnitude (see col. 7 line 1-col. 8 line 35), but Gardner does not clearly teach that each signal path includes a microphone, and a circuit for applying a predictable noise to each signal path to generate the output noise.

However, Hamabe teaches that each signal path includes a microphone (see fig.1b 8a-8h), and a circuit for applying a predictable noise (such as, white noise) to each signal path to generate an output noise (see col. 5 line 31-col.6 line 67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a microphone into each signal path and to include, into the apparatus of Gardner, a module for applying a predictable noise to each signal path to generate the output noise. One of ordinary skill in the art would have been motivated to combine the teaching of Hamabe into Gardner because this would have provided an active noise eliminating system which can correct and update the noise

elimination transfer function for providing a more reliable noise elimination function without causing noise pressure divergence (Hamabe, col. 2, lines 10-16).

As to claim 42, this is the method claim corresponding to system claim 43. See previous apparatus claim 43 for rejection.

Consider claims 17-18, Gardner teaches an apparatus of the selected function is the transfer function (see fig.3, (42,44)) for one of the signal paths (see col.7 line 1-col.8 line 35); and an apparatus of the selected function is a common factor (such as, weights), and the filtering function is determined such that the product of the transfer function and the filtering function is the common factor (such as weights and see fig.3, (42,43) and col.7 line 1-col.8 line 35).

As to claims 2-3, these are method claims of claims 17-18 and thus note the rejections of claims 17-18, respectively.

As to claims 44-45, these are system claims of claims 17-18 and thus note the rejections of claims 17-18, respectively.

Consider claim 19, Gardner teaches an apparatus of the module for applying the filtering function comprises:

(a) a filter (see fig.3, 42, 44) provided to each signal path (see fig.3, ($r_1^{(j)}$ (n),...$r_{mj}^{(j)}$ (n)) ; and

(b) a module (42,44) for loading the filtering function for each signal path (see fig.3, ($r_1^{(j)}$ (n),...$r_{mj}^{(j)}$ (n)) to the corresponding filter (42,44) (see col.7 line 1-col.8 line 35).

As to claim 4, it is the method claim corresponding to apparatus claim 19. See previous apparatus claim 19 for rejection.

Consider claim 22, Hamabe teaches that the microphone is capable of converting a sound signal to an electrical analog signal, and each signal path further includes an analog-to-digital converter coupled to the microphone for converting the electrical analog signal into a digital signal (see fig.1b, (15a-15h); wherein the module for applying a predictable noise (such as, white noise) comprises, for each signal path:

(a) a module for acoustically providing a first predictable noise sample (white noise) to the microphone (8a-8h) inherently with a propagation time delay to produce the output noise ; and

(b) a module for providing a noise signal (such as, error signal) corresponding to the first predictable noise sample (white noise) inherently with the propagation time delay, the module for identifying a filtering function (such as, first and second digital filter and see fig. 1b, (12,13)) comprises for each signal path;

(c) a module for processing the output noise and the noise signal to identify the transfer function(such as, first and second digital filter and see fig. 1b, (12,13)) of its corresponding signal path (see col. 5 line 32-col. 6 line 67). Note discussion of claim 16 for a motivation to combine.

Consider claim 23, Hamabe teaches the module for providing a first predictable noise sample (such as, white noise) comprises:

(a) a first noise generator (see fig. 1b (26)) for generating a first predictable digital noise signal (white noise); and

(b) a first converter (15a-15h) for converting the first prediçtable digital noise signal (white noise) into said the first predictable noise sample a the module for providing a noise signal comprises:

(c) a module for providing a second predictable digital noise signal (such as, engine noise) ; and

(d) a second converter (11) for converting the second predictable digital noise signal into the noise signal (see col. 5 line 32-col. 6 line 67). Note discussion of claim 16 for a motivation to combine.

As to claims 7-8, these are method claims of claims 22-23 and thus note the rejections of claims 22-23, respectively.

Consider claim 24, Hamabe teaches that the second converter comprises: Synthesizer (see fig.1b (10, controller)) for synthesizing he second predictable digital noise signal (engine noise) with the first predictable digital noise signal (white noise);

(b) a module inherently (because by the controller (CPU)) for delay the second predictable digital noise (engine noise) amount of time as the propagation delay time; and

(c) a module for compensating the second predictable digital noise signal (engine noise) for the conversion factor of the first predictable digital noise signal (white noise and see col. 5 line 32-col. 6 line 67). Note discussion of claim 16 for a motivation to combine.

As to claim 9, this is the method claim corresponding to system claim 24. See previous apparatus claim 24 for rejection.

Consider claim 26, Hamabe teaches that the first converter includes

a digital-to-analog converter (17a-17d) for converting the first predictable digital noise signal into an analog noise signal and a loud speaker (7a-7d) for providing the analog noise signal to the microphone (8a-8h and see col. 5 line 32-col. 6 line 67).

Consider claim 28, Gardner teaches the transfer function (see fig.3, 44, 42) of the signal path is a transfer function of the microphone inherently (because, a microphone connects to a channel for picking up a signal from (see fig.3, ($r_1^{(j)}$ (n),...$r_{mj}^{(j)}$ (n))) (see col.2 lines 7-22 and col.7 1-60).

As to claim 10, this is the method claim corresponding to apparatus claim 28. See previous apparatus claim 28 for rejection.

Consider claims 29-31, Hamabe teaches that the propagation delay time is selected to be integer multiple (see equation 1) of the first predictable noise sample (white noise and col. 5 line 32-col. 6 line 67); and each of the first predictable noise signal and the second predictable digital noise signal comprises a white noise signal (see fig.1b, 26 and col.5 line 32 - col.6 line 67); and each of the first predictable noise signal (white noise) and the second predictable digital noise signal (engine noise) comprises a random noise signal (col.5 line 32 - col.6 line 67); Note discussion of claim 16 for a motivation to combine.

As to claims 11 and 14-15, these are method claims of claims 29 -31 and thus note the rejections of claims 29 -31, respectively.

Consider claims 36-38, note discussion of claim 16 with respect to the apparatus. Gardner further teaches an apparatus is comprising a listening device / hearing aid (ear covers or cups) / headset (see col.2 lines 7-22) comprising: a plurality of signal paths

(see fig.3, 42) for transmitting sound signals to a user, each signal path having a microphone inherently (because, a microphone connects to a channel for picking up a signal from (see fig.3, ($r_1^{(j)}$ (n),...$r_{mj}^{(j)}$ (n))) (see col.2 lines 7-22 and col.7 1-60) outputs from the signal paths being equalized (see fig. 6 and col. 8 line 35-col. 9 line40) by the apparatus (see rejection of claim 16).

As to claims 33-35, these are method claims of claims 36-38 and thus note the rejections of claims 36-38, respectively.

Consider claims 39-41, Gardner teaches a hearing aid (a listening device and a headset) comprising:

a signal equalization filter (see fig.3, (42,44) and col.2 lines 7-22 and col.7 lines 1-60) provided for each signal path, wherein the function of the signal equalization filter is determined by the signal equalization filter (see figs. 6-7 and col. 8 line 35-col. 9 line40).

10. Claims 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner (US PAT. 5,737,433) as modified by Hamabe (US PAT. 5,426,703) as applied to claim 1 above, and further in view of Puckette (US PAT. 3,654,390).

Consider claim 12, Hamabe teaches first noise generator (see fig.1b, (26, white noise)) and second predictable digital noise signal (engine noise and see col. 5 line 32-col. 6 line 67); but Hamabe does not clearly teach that noise generator is a maximum length sequence generator.

However, Puckette teaches that noise generator is a maximum length sequence generator (see abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Puckette into the teaching of Hamabe and Gardner to provide synchronizing apparatus using a variable matched filter.

11. Claims 5, 13, 20-21, 25, 27-28, 32, 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner (US PAT. 5,737,433) as modified by Hamabe (US PAT. 5,426,703) as applied to claims 1, 16 and 43 above, and further in view of Lavoie (US PAT. US 2001/0038702).

Consider claim 20, Hamabe teaches the module for applying a predictable noise (such as white noise) comprises, for each signal path (see fig.1b):

(a) a noise generator (26) for providing a first predictable noise sample signal (white noise) to the signal path to produce the output noise and providing a second predictable noise sample signal (engine noise), the second predictable noise sample signal (engine noise) having a property corresponding to the first predictable noise sample signal (white noise) the identifying module comprises, each signal path (see fig. 1b);

(b) a module for processing the output noise and the second predictable noise sample signal (engine noise) to identify the transfer function (such as by first and second digital filter) of its corresponding signal path (see col. Col.5 line 32-col. 6 line 67); but Gardner and Hamabe do not teach a noise generator (26) for providing a first predictable noise sample signal (white noise) to the signal path to produce the output noise and providing a second predictable noise sample signal, the second predictable

noise sample signal having a property substantially identical to the first predictable noise sample signal and being substantially identical to the first predictable noise sample on a sample-by-sample basis, the identifying module comprises, each signal path.

However, Lavoie teaches a noise generator (see fig. 2, (21)) for providing a first predictable noise sample signal (white noise) to the signal path to produce the output noise and providing a second predictable noise sample signal (white noise), the second predictable noise sample signal (white noise) having a property substantially identical to the first predictable noise sample signal (white noise) and being substantially identical to the first predictable noise (white noise) sample on a sample-by-sample basis, the identifying module comprises, each signal path (see 3[0032]-[0036]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Lavoie into the teaching of Hamabe and Gardner to provide an automatic calibration feature for adjusting audio channel responses to the characteristic of the listening environment.

As to claim 5, it is the method claim corresponding to apparatus claim 20. See previous apparatus claim 20 for rejection.

As to claim 46, it is a sound system claim corresponding to apparatus claim 20. See previous apparatus claim 20 for rejection.

Consider claim 21, Hamabe teaches that the microphone is capable of converting a sound signal to an electrical analog signal and each signal path further includes an

analog-to-digital converter coupled to the microphone for converting the electrical analog signal into a digital signal (see fig.1b, (15a-15h).

Consider claims 25 and 27, Hamabe teaches first noise generator (see fig.1b, (26, white noise)) and second predictable digital noise signal (engine noise and see col. 5 line 32-col. 6 line 67); but Gardner and Hamabe do not clearly teach that the first predictable digital noise signal is a first maximum length sequence noise, the second predictable digital noise signal being a second maximum length sequence noise that is substantially identical to the first predictable noise signal on a sample-by-sample basis.

However, Lavoie teaches that the first predictable digital noise signal is a first maximum length sequence noise (see fig.2, 21), the second predictable digital noise signal being a second maximum length sequence noise (21) that is substantially identical to the first predictable noise signal on a sample-by-sample basis (see 3[0032]-[0036]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Lavoie into the teaching of Hamabe and Gardner to provide an automatic calibration feature for adjusting audio channel responses to the characteristic of the listening environment.

As to claim 13, it is the method claim corresponding to apparatus claim 20. See previous apparatus claim 27 for rejection.

As to claims 47-48, these are sound system claims of claims 25, 27 and thus note the rejections of claims 25, 27, respectively.

Consider claim, 28 Gardner teaches the transfer function (see fig.3, 44, 42) of the signal path is a transfer function of the microphone inherently (because, a microphone connects to a channel for picking up a signal from (see fig.3, ($r_1^{(j)}$ (n),...$r_{mj}^{(j)}$ (n))) (see col.2 lines 7-22 and col.7 1-60).

Consider claim 32, Hamabe teaches first noise generator (see fig.1b, (26, white noise)) and second predictable digital noise signal (engine noise and see col. 5 line 32- col. 6 line 67); but Gardner and Hamabe do not clearly teach that the first generator includes a maximum length sequence generator, the first predictable digital noise signal and the second predictable digital noise signal being generated by the maximum length sequence generator.

However, Lavoie teaches a first generator includes a maximum length sequence generator (see fig.2, (21)), the first predictable digital noise signal (21) and the second predictable digital noise signal (21) being generated by the maximum length sequence generator(21 and see 3[0032]-[0036]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Lavoie into the teaching of Hamabe and Gardner to provide an automatic calibration feature for adjusting audio channel responses to the characteristic of the listening environment.

12. Claims 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner (US PAT. 5,737,433) as modified by Hamabe (US PAT. 5,426,703) as applied

to claims 16 and 43 above, and further in view of Roberts, R. A. et al., "Digital Signal Processing," ISBN 0-201-16350-0, pp. 486-487.

Consider claims 49-50, Gardner teaches module for identifying a transfer function performs (see fig.3, (42,44) and col.2 lines 7-22 and col.7 lines 1-60); Gardner fails to teach that the transfer function performs an Auto Regressive Moving Average (ARMA) to estimate the transfer function.

However, Roberts teaches that a transfer function performs an Auto Regressive Moving Average (ARMA) to estimate the transfer function (see "Digital Signal Processing," ISBN 0-201-16350-0, pp. 486-487).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Roberts into the teaching of Gardner and Hamabe to provide a sound environment for the purpose of acquiring the desired audio sound quality for the market demand.

Response to Arguments

13. Applicant's arguments with respect to claim1-5 and 7-50 have been considered but are moot in view of the new ground(s) of rejection.

Regarding the amended and argued features of the dependent claims (remarks, pages 14-15), note the respective rejections for detailed discussions.

Regarding independent claims 1, 16, 42 and 43, applicant argued in substance that Hamabe does not teach the claimed predictable noise because (1) in Hamabe, the microphones are used to capture a combination of environmental noise sources and

noise generated by speakers, (2) Hamabe generates an adaptively modified noise created from white noise to minimize phase difference between said white noise and environmental noise, (3) the use of adaptively modified white noise to minimize the phase difference between said white noise and environmental noise is quite different from the use of a predictable noise to identify the transfer function of a signal path having a microphone as Applicants currently claim, (4) the signal path of Hamabe cannot be explicitly determined, and there is no way of explicitly identifying the signal path in Hamabe, and (5) according to the present application, a predictable noise is provided from, for example, a loud speaker, to a signal path having a microphone to isolate the transfer function of the signal path and thus identify the transfer function of the signal path, and the white noise produced by the loud speaker is not adaptively modified. (See remarks, pages 12-13).

The examiner's response is as follows. As to (1), whether the microphones are used to capture a combination of environmental noise sources and noise generated by speakers is neither required nor precluded by the claim language. For example, claim 16 only requires that each signal path has a microphone (see claim 16, line 2), which is met by Hamabe, as discussed in the rejection of claim 16. Hamabe is relied on to teach a predictable noise / white noise can be added to the noise sources such as those in Gardner.

As to (2)-(3), the argued adaptively modified noise, created from white noise, and minimizing phase difference between said white noise and environmental noise are not required, nor precluded by applicant's claim language. See claims 1, 16, 42 and 43.

Similarly, the argued use of a predictable noise to identify the transfer function of a signal path is not claimed. Instead, claims 1, 16, 42 and 43 require that the predictable noise is used/applied to each signal path to generate an output noise. Hamabe teaches applying a predictable noise (white noise) to each signal path to generate an output noise (col. 5 line 31-col.6 line 67), which is subsequently used to identify a transfer function of each signal path (col. 8, lines 24-31). Therefore, the combination of Gardner and Hamabe meet the applying and identifying as claimed.

As to (4), the argued explicitly identifying the signal path, with the predictable noise, is neither required nor excluded by the claim language. See claims 1, 16, 42 and 43. The argument is thus moot.

As to (5), the argued predictable noise being to *isolate* the transfer function of the signal path and thus identifying the transfer function of the signal path is not claimed. Further, whether or not the white noise produced by the loud speaker is not adaptively modified is not specified in the claims.

In other words, applicant appears to argue the difference between the predictable noise as claimed and the white noise of Hamabe in terms of the phase difference in relation to environmental noise, the identification of signal paths, and the isolation of transfer function of the signal path, which are not recited in the claims.

Further, the application as filed does not provide a definition, nor a detailed description, of the argued "predictable noise". The closest disclosure describes the first noise source 31 and the second noise source 32. The closest description pertinent to 'predictable' is located in Detail Description, [0056], which recites:

"The first and second noise sources 31 and 32 may include an MLS (Maximum Length Sequence) generator. The MLS generator is a noise generator which generates white noise or random noise in a controlled and predictable way; see T.Schneider, D. G. Jamieson, "A Dual channel MLS-Based Test System for Hearing-Aid Characterization", J. Audio Eng. Soc, Vol. 41, No. 7/8, July/August 1993, p583-593, the disclosure of which is incorporated herein by reference thereto. Ideally This MLS noise has an equal magnitude at all frequencies. Also, the fact that the noise can be generated in a controlled way means that the random noise is always the same on a sample-by-sample basis. Therefore, it is possible to have two or more noise generators, i.e., MLS generators, produce the exact same noise sample at different instants in time although the noise is said to be randomly distributed. In alternate, one common noise generator can be used for both the first and second noise sources 31 and 32."

Clearly, applicant's predictable noise as disclosed includes white noise, and application of which appears well known. The white noise of Hamabe is generated in a predictable/controlled manner, resulting in flat frequency spectra, via the use of the white noise generator 26 and the low-pass filter 27 (col. 8, lines 32-37). Therefore, such white noise is predictable and meet the 'predictable noise' both as claimed and as disclosed.

Applicant further argued that the Exnminer has not set forth a prima facie case of obviousness as required by MPEP 2143 (see remark page 13 fourth paragraph).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by

combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Gardner (433) and Hamabe (703) both teach an active noise eliminating system.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a microphone into each signal path and to include, into the apparatus of Gardner, a module for applying a predictable noise to each signal path to generate the output noise. One of ordinary skill in the art would have been motivated to combine the teaching of Hamabe into Gardner because this would have provided an active noise eliminating system which can correct and update the noise elimination transfer function for providing a more reliable noise elimination function without causing noise pressure divergence (Hamabe, col. 2, lines 10-16).

For these reasons, applicant's arguments are not persuasive.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rasmusson (US PAT. 7,062,039) is cited to show other listening device.

16. Any response to this action should be mailed to:

Mail Stop ____(explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

(703) 872-9306

Hand-delivered responses should be brought to:

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao, Lun-See whose telephone number is (571) 272-7501 The examiner

can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao, Lun-See L.S.
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501
Date 07-31-2006

VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600